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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/629,415	08/01/2000	Mark C. Fowler	0100.0001150	6068

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EXAMINER
CHUNG, DANIEL J

ART UNIT	PAPER NUMBER
2672	4

DATE MAILED: 05/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/629,415	FOWLER ET AL.	
	Examiner	Art Unit	
	Daniel J Chung	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2-24-03* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 9-16* is/are rejected.

7)☒ Claim(s) *6-8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claims 1-16 are presented for examination. This office action is in response to the amendment filed on 2-24-2003.

The objection to the specification has been maintained.

Specification

Please review the application and correct all informalities.

As provided in 37 CFR 1.77(b), the specification of a utility application should include the section for "BRIEF SUMMARY OF THE INVENTION". However, this particular section is not presented in this Application. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily

published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Rosman et al (6,222,550).

Regarding claim 1, Rosman et al discloses that the claimed feature of a system for traversing and rendering a graphic primitive, comprising:

A setup engine ["triangle setup engine"; 28] that outputs representative values of a graphic primitive (See Fig 3, Abstract line 2-6, col 3 line 63-67); a raster engine ["raster engine"; 34] that receives the representative values of the graphic primitive and forms therefrom representative pixels, the raster engine having at least a scan module that scans only pixels within the graphic primitive and assigns data values [i.e. "pixel color"] to each of the pixels and a look-ahead module that identifies pixels that are inside of the primitive. (See Fig 3, Abstract line 11-16, col 4 line 1-18, col 4 line 41-55)

Regarding claim 9, Rosman et al discloses that the claimed feature of a method in a graphics system for traversing and rendering a graphic primitive, comprising:

Determining representative values of a graphic primitive; determining, successively, from the representative values of the primitive data values for each pixel of a set of pixels that are inside of the triangle, and, for each pixel of the set of pixels,

looking ahead to a next adjacent pixel to determined if the next adjacent pixel is inside of the triangle; and storing a characteristic value for the next adjacent pixel when the next adjacent pixel is inside the triangle. (See Fig 3, Abstract, col 3 line 63-67, col 4 line 1-18, col 4 line 41-55, col 5 line 57-61, col 6 line 33-45, col 7 line 11-16, col 12 line 5+)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosman et al in view of Zhao et al (5,945,997).

Regarding claim 2, Rosman et al fails to teach that the scan module is structured to perform block mode scanning. However, Zhao et al discloses that "a system and method for traversing and rendering a graphic primitive, employing block and band oriented traversal algorithms". (See Abstract, Fig 3, Fig 4A-4D, Fig 8, col 5 line 40-col 6 line 35) It would have obvious to one having ordinary skill in the art at the time of Applicant's invention to combine the teaching of Rosman et al and Zhao et al, because they both relate to rendering graphic primitives in an analogous art, and the

teaching/suggestions in Rosman et al (col 5 line 48-50) regarding "a larger group of pixels are processed", provide the motivation to employ the block scanning/traversing of Zhao et al, in order to further "improve performance of the graphic engine". (See col 4 line 59-63 in Zhao et al, Also col 5 line 48-50 in Rosman et al)

Claim 10 is equivalent to claim 2, and thus the rejection to claim 2 hereinabove is also applicable to claim 10, but applied in view of the rejection to base claim 9.

Claims 3-5 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosman et al in view of Malamy et al (6,094,201).

Regarding claims 3 and 4, Rosman et al discloses that the graphic primitive is a triangle, and wherein the representative values are at least one edge function of the triangle/a longest side of the triangle and slope values for at least one vertex of the triangle. (See col 2 line 1-11, col 6 line 30-32, col 6 line 51-60, col 12 line 45+) Rosman et al does not explicitly discloses that the representative values are edge function of the triangle or edge function of a longest side of the triangle. However, such limitation is shown in the teaching of Malamy et al. (See Abstract, Fig 2, Fig 3, Fig 4, col 2 line 45-54, col 5 line 1-5) It would have been obvious to one skilled in the art to incorporate the teaching of Malamy et al into the teaching of Rosman et al, in order to "improve overall performance without increasing system cost or introducing additional component

architecture" (See col 2 line 27-31, col 2 line 45-54 in Malamy et al), as such improvement is also advantageously desirable in the teaching of Rosman et al by system optimization.

Regarding claim 5, Rosman et al discloses that the scan module is structured to check a next adjacent pixel while processing a current pixel to determined if the next adjacent pixel is inside the triangle. (See col 5 line 57-61, col 6 line 33-45, col 7 line 11-16)

Claims 11-12 are respectively equivalent to claims 3-4, and thus the rejections to claims 3-4 hereinabove are also respectively applicable to claims 11-12, but applied in view of the rejections to base claim 9.

Regarding claim 13, refer to the discussion for the claim 3 hereinabove, Rosman et al further discloses that the claimed feature of a graphics system, comprising: at least one graphic triangular primitive; a first module that generates edge functions for the primitive and that provides indication of which of the edge functions corresponds to a longest side of the triangular primitive, and that provides starting coordinates for the triangular primitive; a second module that forms pixels using the edge functions of the primitive and that provides at least one data value for each pixel; a third module that, from a current pixel, determines if a next pixel is within the triangular primitive, the third module only storing a data value of the next pixel when the next pixel is inside of the

triangular primitive. (See Fig 3, Abstract, col 3 line 63-67, col 4 line 1-18, col 4 line 41-55, col 5 line 57-61, col 6 line 33-45, col 7 line 11-16, col 12 line 5+)

Regarding claim 14, Rosman et al discloses that a data value is assigned to a current pixel within the triangular primitive, and a data value is saved ["frame memory"; 36] for a next pixel within the triangular primitive only when the next primitive is within the triangular primitive. (See Abstract, Fig 3, col 3 line 63-col 4 line 18, col 4 line 41-55)

Regarding claim 15, Rosman et al discloses that data values are assigned only to pixels within the triangular primitive and never to pixels outside of the triangular primitive. (See Abstract, Fig 3, col 3 line 63-col 4 line 18, col 4 line 41-55)

Regarding claim 16, Rosman et al discloses that the second module forms a plurality of data values for each pixel. (See Abstract, Fig 3, col 3 line 63-col 4 line 18, col 4 line 41-55)

Allowable Subject Matter

Claims 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments received on 2-24-2003 have been carefully considered. However, they do not overcome the previous rejections, which have been maintained. Thus, the finality of this office action is deemed proper.

Regarding claims 1, 9 and 13-16, applicant argued that the cited reference does not discloses that "determines if a pixel is inside or outside a primitive" or "looking ahead to a next adjacent pixel to determine if the next adjacent pixel is inside of the triangle." (See Remarks p.3 line 2-3, p.3 line 19-20) however, Rosman clearly teaches that "The Pixel Pipe then has the responsibility of generating all the pixel colors within the triangle" (See col 1 line 51-53),"each triangle pixel-pipeline generates span endpoints and rasterizes pixels within a triangle" (See col 4 line 53-55), "hundreds or thousands of pixels within a triangle are generated from the three vertices input to triangle pixel-pipelines." (See col 6 line 40-42) It was known in the art that the processing of determine/identify a pixel inside of a primitive (Scanning process, span walker) is necessarily required for rasterizing/generating a pixel within a triangle [primitive] of Rosman. Furthermore, this is clearly shown in the Applicant's Admitted Prior Art ('background of invention') that "this check may be performed, for example, by comparing the x coordinate of the currently selected pixel with the edge of the primitive. If the end of the span has not been reached, the span walker continues by selecting the next pixel and repeating texel retrieval" (See Spec. p.3 line 22-26, Also See col 8 line

47-58, col 9 line 20-23 in Zhao ["span-walking generally involves processing pixels sequentially, as the horizontal traversal accesses each pixel in order"])

Regarding claims 2 and 10, it is noted that the features upon which applicant relies (i.e. "a next pixel look ahead process") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding claim 3, applicant argued that the cited reference does not discloses "edge functions". (See Remarks p.6 line 17) However, Malamy et al clearly discloses that "Edge walk module determines the boundaries of each span to be rendered". (See col 6 line 28-29) it was known in the art that the edge function of the triangle [edge walker] is necessarily required for determining the boundaries of primitives, thereby rasterizing a pixel within a primitive. Clearly, without defining [edge function] the boundaries of the triangle, the process of rasterizing pixels within a primitives can not be performed.

Conclusion

Applicant's response and amendment are not persuasive and the previous grounds of rejection have been maintained. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Chung whose telephone number is (703) 306-3419. He can normally be reached Monday-Thursday and alternate Fridays from 7:30am- 5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael, Razavi, can be reached at (703) 305-4713.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

djc
May 13, 2003

MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600